SECTION 1. CHEMICAL IDENTIFICATION

CATALOG #: 00128

NAME: Di-tert-butyl pyrocarbonate

SYNONYMS: Boc anhydride
            Di-tert-butyl dicarbonate
            Pyrocarbonic acid di-tert-butyl ester

24 HOUR EMERGENCY TELEPHONE: (800) 535-5053 (USA)
                              352-323-3500 (INTERNATIONAL)

TO REQUEST AN MSDS: (800) 869-9290

CUSTOMER SERVICE: (630) 766-2112

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

MF: C_{10}H_{18}O_{5}

MW: 218.25

CAS-NO. 24424-99-5

PURITY: 99.5 % +(GC)

SECTION 3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
FLAMMABLE LIQUID, HIGHLY TOXIC BY INHALATION, SKIN SENSITISER, IRRITANT

OSHA HAZARDS
FLAMMABLE LIQUIDS (CATEGORY 3)
ACUTE TOXICITY, INHALATION (CATEGORY 1)
SKIN IRRITATION (CATEGORY 2)

GHS CLASSIFICATION
EYE IRRITATION (CATEGORY 2A)
SKIN SENSITIZATION (CATEGORY 1)
SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (CATEGORY 3)

GHS LABEL ELEMENTS, INCLUDING PRECAUTIONARY STATEMENTS

SIGNAL WORD DANGER
HAZARD STATEMENT(S)
H226 FLAMMABLE LIQUID AND VAPOUR.
H315 CAUSES SKIN IRRITATION.
H317 MAY CAUSE AN ALLERGIC SKIN REACTION.
H319 CAUSES SERIOUS EYE IRRITATION.
H330 FATAL IF INHALED.
H335 MAY CAUSE RESPIRATORY IRRITATION.

PRECAUTIONARY STATEMENT(S)
P260 DO NOT BREATHE DUST/ FUME/ GAS/ MIST/ VAPOURS/ SPRAY.
P280 WEAR PROTECTIVE GLOVES.
P284 WEAR RESPIRATORY PROTECTION.
P305 + P351 + P338 IF IN EYES: RINSE CAUTIOUSLY WITH WATER FOR SEVERAL MINUTES. REMOVE CONTACT LENSES, IF PRESENT AND EASY TO DO. CONTINUE RINSING.
P310 IMMEDIATELY CALL A POISON CENTER OR DOCTOR/ PHYSICIAN.

HMIS CLASSIFICATION
HEALTH HAZARD: 3
FLAMMABILITY: 3
PHYSICAL HAZARDS: 0

NFPA RATING
HEALTH HAZARD: 4
FIRE: 3
REACTIVITY HAZARD: 0

POTENTIAL HEALTH EFFECTS
INHALATION MAY BE FATAL IF INHALED. CAUSES RESPIRATORY TRACT IRRITATION.
SKIN MAY BE HARMFUL IF ABSORBED THROUGH SKIN. CAUSES SKIN IRRITATION.
EYES CAUSES EYE IRRITATION.
INGESTION MAY BE HARMFUL IF SWALLOWED.

SECTION 4. FIRST-AID MEASURES

GENERAL ADVICE CONSULT A PHYSICIAN. SHOW THIS SAFETY DATA SHEET TO THE DOCTOR IN ATTENDANCE. MOVE OUT OF DANGEROUS AREA.

IF INHALED IF BREATHED IN, MOVE PERSON INTO FRESH AIR. IF NOT BREATHING GIVE ARTIFICIAL RESPIRATION CONSULT A PHYSICIAN.

IN CASE OF SKIN CONTACT WASH OFF WITH SOAP AND PLENTY OF WATER. TAKE VICTIM IMMEDIATELY TO HOSPITAL. CONSULT A PHYSICIAN.

IN CASE OF EYE CONTACT RINSE THOROUGHLY WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES AND CONSULT A PHYSICIAN.

IF SWALLOWED DO NOT INDUCE VOMITING. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. RINSE MOUTH WITH WATER. CONSULT A PHYSICIAN.

SECTION 5. FIRE AND EXPLOSION DATA

CONDITIONS OF FLAMMABLE IN THE PRESENCE OF A SOURCE OF IGNITION
FLAMMABILITY
WHEN THE TEMPERATURE IS ABOVE THE FLASH POINT. KEEP AWAY FROM HEAT/SPARKS/OPEN FLAME/HOT SURFACE. NO SMOKING.

SUITABLE EXTINGUISHING MEDIA
USE WATER SPRAY, ALCOHOL-RESISTANT FOAM, DRY CHEMICAL OR CARBON DIOXIDE.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS
WEAR SELF CONTAINED BREATHING APPARATUS FOR FIRE FIGHTING IF NECESSARY

HAZARDOUS COMBUSTION PRODUCTS
HAZARDOUS DECOMPOSITION PRODUCTS FORMED UNDER FIRE CONDITIONS. - CARBON OXIDES

FURTHER INFORMATION
USE WATER SPRAY TO COOL UNOPENED CONTAINERS.

SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS
WEAR RESPIRATORY PROTECTION. AVOID BREATHING VAPORS, MIST OR GAS. ENSURE ADEQUATE VENTILATION. REMOVE ALL SOURCES OF IGNITION. EVACUATE PERSONNEL TO SAFE AREAS. BEWARE OF VAPOURS ACCUMULATING TO FORM EXPLOSIVE CONCENTRATIONS. VAPOURS CAN ACCUMULATE IN LOW AREAS.

ENVIRONMENTAL PRECAUTIONS
PREVENT FURTHER LEAKAGE OR SPILLAGE IF SAFE TO DO SO. DO NOT LET PRODUCT ENTER DRAINS.

METHODS FOR CLEANING UP
CONTAIN SPILLAGE, AND THEN COLLECT WITH AN ELECTRICALLY PROTECTED VACUUM CLEANER OR BY WET-BRUSHING AND PLACE IN CONTAINER FOR DISPOSAL ACCORDING TO LOCAL REGULATIONS (SEE SECTION 13).

SECTION 7. HANDLING AND STORAGE

HANDLING
AVOID CONTACT WITH SKIN AND EYES. AVOID INHALATION OF VAPOUR OR MIST. KEEP AWAY FROM SOURCES OF IGNITION - NO SMOKING. TAKE MEASURES TO PREVENT THE BUILD UP OF ELECTROSTATIC CHARGE.

STORAGE
KEEP CONTAINER TIGHTLY CLOSED IN A DRY AND WELL-VENTILATED PLACE. CONTAINERS WHICH ARE OPENED MUST BE CAREFULLY RESEALED AND KEPT UPRIGHT TO PREVENT LEAKAGE. RECOMMENDED STORAGE TEMPERATURE: 2 - 8 °C HANDLE AND OPEN CONTAINER WITH CARE.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

CONTAINS NO SUBSTANCES WITH OCCUPATIONAL EXPOSURE LIMIT VALUES.

PERSONAL PROTECTIVE EQUIPMENT
RESPIRATORY PROTECTION  WHERE RISK ASSESSMENT SHOWS AIR-PURIFYING RESPIRATORS ARE APPROPRIATE USE A FULL-FACE PARTICLE RESPIRATOR TYPE N100 (US) OR TYPE P3 (EN 143) RESPIRATOR CARTRIDGES AS A BACKUP TO ENGINEERING CONTROLS. IF THE RESPIRATOR IS THE SOLE MEANS OF PROTECTION, USE A FULL-FACE SUPPLIED AIR RESPIRATOR. USE RESPIRATORS AND COMPONENTS TESTED AND APPROVED UNDER APPROPRIATE GOVERNMENT STANDARDS SUCH AS NIOSH (US) OR CEN (EU).

HAND PROTECTION  HANDLE WITH GLOVES. GLOVES MUST BE INSPECTED PRIOR TO USE. USE PROPER GLOVE REMOVAL TECHNIQUE (WITHOUT TOUCHING GLOVE’S OUTER SURFACE) TO AVOID SKIN CONTACT WITH THIS PRODUCT. DISPOSE OF CONTAMINATED GLOVES AFTER USE IN ACCORDANCE WITH APPLICABLE LAWS AND GOOD LABORATORY PRACTICES. WASH AND DRY HANDS.

EYE PROTECTION  FACE SHIELD AND SAFETY GLASSES USE EQUIPMENT FOR EYE PROTECTION TESTED AND APPROVED UNDER APPROPRIATE GOVERNMENT STANDARDS SUCH AS NIOSH (US) OR EN 166(EU).

SKIN AND BODY PROTECTION  COMPLETE SUIT PROTECTING AGAINST CHEMICALS, FLAME RETARDANT ANTISTATIC PROTECTIVE CLOTHING, THE TYPE OF PROTECTIVE EQUIPMENT MUST BE SELECTED ACCORDING TO THE CONCENTRATION AND AMOUNT OF THE DANGEROUS SUBSTANCE AT THE SPECIFIC WORKPLACE.

HYGIENE MEASURES  AVOID CONTACT WITH SKIN, EYES AND CLOTHING. WASH HANDS BEFORE BREAKS AND IMMEDIATELY AFTER HANDLING THE PRODUCT.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

| Appearance: | Clear colorless |
| PH | NO DATA AVAILABLE |
| Boiling Point: | 56-57°C/0.5mm |
| Melting Point: | 21-23°C |
| Density | 0.95 |
| Vapour Pressure | NO DATA AVAILABLE |
| Water Solubility | NO DATA AVAILABLE |
| Decomposition Temp. | NO DATA AVAILABLE |
| Vapour Density | NO DATA AVAILABLE |
| Refractive Index | NO DATA AVAILABLE |

SECTION 10. STABILITY AND REACTIVITY

| Stability | STABLE UNDER RECOMMENDED STORAGE CONDITIONS. |
| Materials to Avoid | OXIDIZING AGENTS, REDUCING AGENTS, BASES, AVOID CONTACT WITH; ACIDS |
HAZARDOUS DECOMPOSITION PRODUCTS FORMED UNDER FIRE CONDITIONS. - CARBON OXIDES

CONDITIONS TO AVOID HEAT, FLAMES AND SPARKS.

POSSIBILITY OF HAZARDOUS REACTIONS VAPOURS MAY FORM EXPLOSIVE MIXTURE WITH AIR.

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**SECTION 11. TOXICOLOGICAL INFORMATION**

<table>
<thead>
<tr>
<th>ACUTE TOXICITY</th>
<th>ORAL LD50</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 ORAL - MAMMAL - &gt; 5,000 MG/KG</td>
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<table>
<thead>
<tr>
<th>INHALATION LC50</th>
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<tbody>
<tr>
<td>LC50 INHALATION - RAT - 4 H - 100 MG/M3</td>
</tr>
</tbody>
</table>

**REMARKS:** SENSE ORGANS AND SPECIAL SENSES (NOSE, EYE, EAR, AND TASTE); EYE; OTHER. LUNGS, THORAX, OR RESPIRATION; DYSPNEA. NUTRITIONAL AND GROSS METABOLIC; WEIGHT LOSS OR DECREASED WEIGHT GAIN.

<table>
<thead>
<tr>
<th>DERMAL LD50</th>
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<tbody>
<tr>
<td>LD50 DERMAL - MAMMAL - &gt; 2,000 MG/KG</td>
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**OTHER INFORMATION ON ACUTE TOXICITY** NO DATA AVAILABLE

<table>
<thead>
<tr>
<th>SKIN CORROSION/IRRITATION</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>SERIOUS EYE DAMAGE/EYE IRRITATION</th>
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<tbody>
<tr>
<td>NO DATA AVAILABLE</td>
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</table>

**RESPIRATORY OR SKIN SENSITIZATION** MAY CAUSE SENSITIZATION BY SKIN CONTACT.

<table>
<thead>
<tr>
<th>GERM CELL MUTAGENICITY</th>
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<tr>
<td>NO DATA AVAILABLE</td>
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</table>

**CARCINOGENICITY**

<table>
<thead>
<tr>
<th>IARC:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS IDENTIFIED AS PROBABLE, POSSIBLE OR CONFIRMED HUMAN CARCINOGEN BY IARC.</td>
</tr>
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<thead>
<tr>
<th>ACGIH:</th>
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</thead>
<tbody>
<tr>
<td>NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS IDENTIFIED AS A CARCINOGEN OR POTENTIAL CARCINOGEN BY ACGIH.</td>
</tr>
</tbody>
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<thead>
<tr>
<th>NTP:</th>
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</thead>
<tbody>
<tr>
<td>NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS IDENTIFIED AS A KNOWN OR ANTICIPATED CARCINOGEN BY NTP.</td>
</tr>
</tbody>
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<thead>
<tr>
<th>OSHA:</th>
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<tbody>
<tr>
<td>NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS IDENTIFIED AS A CARCINOGEN OR POTENTIAL CARCINOGEN BY OSHA.</td>
</tr>
</tbody>
</table>

**REPRODUCTIVE TOXICITY** NO DATA AVAILABLE

**TERATOGENICITY** NO DATA AVAILABLE

**SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (GLOBALLY HARMONIZED SYSTEM)** NO DATA AVAILABLE
SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE (GLOBALLY HARMONIZED SYSTEM)

ASPIRATION HAZARD

SIGNS AND SYMPTOMS OF EXPOSURE

TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL, AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

POTENTIAL HEALTH EFFECTS

INHALATION

MAY BE FATAL IF INHALED. CAUSES RESPIRATORY TRACT IRRITATION.

SKIN

MAY BE HARMFUL IF ABSORBED THROUGH SKIN. CAUSES SKIN IRRITATION.

EYES

CAUSES EYE IRRITATION.

INGESTION

MAY BE HARMFUL IF SWALLOWED.

ADDITIONAL INFORMATION

RTECS: HT0230000

SECTION 12. ECOLOGICAL INFORMATION

TOXICITY

NO DATA AVAILABLE

PERSISTENCE AND DEGRADABILITY

NO DATA AVAILABLE

BIOACCUMULATIVE POTENTIAL

NO DATA AVAILABLE

MOBILITY IN SOIL

NO DATA AVAILABLE

PBT AND VPVB ASSESSMENT

NO DATA AVAILABLE

OTHER ADVERSE EFFECTS

NO DATA AVAILABLE

SECTION 13. DISPOSAL CONSIDERATIONS

PRODUCT

BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER BUT EXERT EXTRA CARE IN IGNITING AS THIS MATERIAL IS HIGHLY FLAMMABLE. OFFER SURPLUS AND NON-RECYCLABLE SOLUTIONS TO A LICENSED DISPOSAL COMPANY. CONTACT A LICENSED PROFESSIONAL WASTE DISPOSAL SERVICE TO DISPOSE OF THIS MATERIAL.

CONTAMINATED PACKAGING

DISPOSE OF AS UNUSED PRODUCT.

SECTION 14. TRANSPORT INFORMATION

DOT REGULATIONS:

PROPER SHIPPING NAME: TOXIC LIQUIDS, FLAMMABLE, ORGANIC, N.O.S. (Di-tert-butyl pyrocarbonate)

UN#: UN2929

CLASS: 6.1 (3)

PACKING GROUP: I

MARINE POLLUTANT: NO

POISON INHALATION HAZARD: NO
IATA REGULATIONS:
PROPER SHIPPING NAME: TOXIC LIQUIDS, FLAMMABLE, ORGANIC, N.O.S. (Di-tert-butyl pyrocarbonate)
UN#: UN2929
CLASS: 6.1 (3)
Packing Group: I
IATA Passenger: NOT PERMITTED FOR TRANSPORT

SECTION 15. REGULATORY INFORMATION

OSHA HAZARDS
FLAMMABLE LIQUID, HIGHLY TOXIC BY INHALATION, SKIN SENSITISER, IRRITANT

SARA 302 COMPONENTS
NO CHEMICALS IN THIS MATERIAL ARE SUBJECT TO THE REPORTING REQUIREMENTS OF SARA TITLE III, SECTION 302

SARA 313 COMPONENTS
THIS MATERIAL DOES NOT CONTAIN ANY CHEMICAL COMPONENTS WITH KNOWN CAS NUMBERS THAT EXCEED THE THRESHOLD (DE MINIMIS) REPORTING LEVELS ESTABLISHED BY SARA TITLE III, SECTION 313.

SARA 311/312 HAZARDS
FIRE HAZARD, ACUTE HEALTH HAZARD

MASSACHUSETTS RIGHT TO KNOW COMPONENTS
NO COMPONENTS ARE SUBJECT TO THE MASSACHUSETTS RIGHT TO KNOW ACT.

PENNSYLVANIA RIGHT TO KNOW COMPONENTS

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>REVISION DATE</th>
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<tbody>
<tr>
<td>Di-tert-butyl pyrocarbonate</td>
<td>24424-99-5</td>
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NEW JERSEY RIGHT TO KNOW COMPONENTS

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CALIFORNIA PROP. 65 COMPONENTS
THIS PRODUCT DOES NOT CONTAIN ANY CHEMICALS KNOWN TO STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS, OR ANY OTHER REPRODUCTIVE HARM.

SECTION 16. OTHER INFORMATION

MSDS LEGEND:
MW: MOLECULAR WEIGHT
MF: MOLECULAR FORMULA
VOC: VOLATILE ORGANIC COMPOUNDS
ACGIH: AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS
CAS: CHEMICAL ABSTRACTS SERVE REGISTRY NUMBER
OSHA: OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PEL: PERMISSIBLE EXPOSURE LIMIT (OSHA)
TLV: THRESHOLD LIMIT VALUE (ACGIH)

IMPORTANT:
The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall CII be liable for any claims, losses, or damages of any third party or for lost profits or any
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